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United States Department of Agriculture
Bureau of Entomology and Plant Quarantine

A SCOOP FOR COLLECTING LARGE NUMBERS OF SMALL INSECTS
FROM THEIR HOST PLANTS

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The apparatus described below was developed for collecting large numbers of nymphs of the beet leafhopper from plants of Russian-thistle (Salsola pestifer A. Nels.). Essentially it is a large modified funnel with a cutting edge, which may be swung rapidly at a plant so as to cut off the plant at the ground, so that the nymphs can be collected in a sack tied over the small end of the funnel.

The scoop, or modified funnel (fig. 1, A), is nearly semi-circular in cross section. It is made of 22-gauge galvanized iron sheeting and has the dimensions given in the drawing. A tapered slit, 4 inches wide at the outer end and $8\frac{1}{2}$ inches deep, is cut into the flat or bottom side of the funnel, and strips of tool steel with sharp edges are bolted to the sides of the slit to act as cutting edges. The slit is made of such a depth that the plant is almost wholly surrounded by the sides of the funnel before the stem is severed (fig. 2), and any insects jarred from the plant are caught in the scoop. The small end of the funnel ends in a ring and is covered with 14-mesh galvanized screening (fig. 1, B) to keep large pieces of plant from entering the sack with the insects.

As the machine must withstand rough usage, several reinforcements are needed. The sheet metal forming the semicircular portion of the funnel opening is rolled over a heavy wire to stiffen the edge, the bottom and sides are folded together, and the apron shielding the sack is strengthened by extra folds of the metal. Further reinforcement to the bottom edge would be desirable if the scoop is intended for very heavy duty.

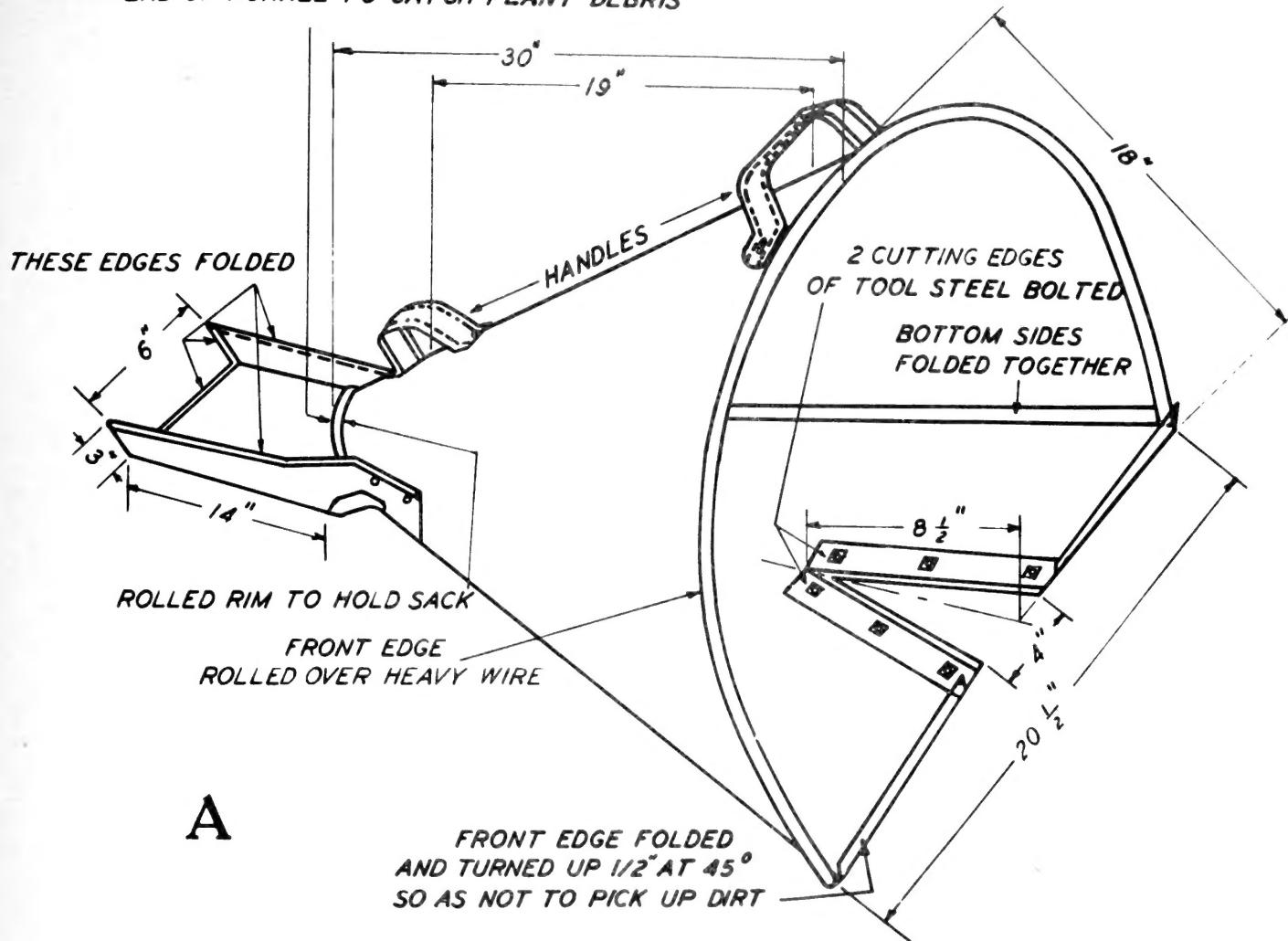
The collecting sack, which is shown in figure 3, is made of a piece of open-weave material, such as marquisette or scrim, about 15 inches square. A hem containing a drawstring is run across one side of the square, which is then folded and seamed to make a

sack. When the scoop is in use, a whole plant or part of a plant, to serve as food for the insects, is inserted in the sack, which is placed over the small end of the funnel. The drawstring is pulled tightly over the ring and tied. After sufficient insects have been collected, the sack is removed and the drawstring is tightened and wound around the neck of the sack to close the top tightly.

The scoop is swung sharply at a growing plant in such a manner that the stem enters the slit in the funnel bottom. The brisk swing is "followed through," bringing the funnel and contained plant to a vertical position. The apparatus is then set down firmly by the operator to jar the insects from the plant into the sack, and a second worker thrashes the plant with a stick to dislodge any remaining nymphs and then removes it from the funnel so that the process may be repeated. A considerable amount of finely divided plant material and trash works its way into the sack in spite of the screen at the small end of the funnel, and a new sack must be used for every 15 to 20 plants.

With this device two workers collected over 6,000 nymphs of the beet leafhopper in about 2 hours of working time, a task that would have taken at least a full day if methods formerly used had been employed.

14 - MESH GALVANIZED SCREEN IN
END OF FUNNEL TO CATCH PLANT DEBRIS



B

Figure 1.--Details of the scoop.
A, Scoop seen from the front and side.
B, Rear view of the funnel, showing the rim for holding the sack.

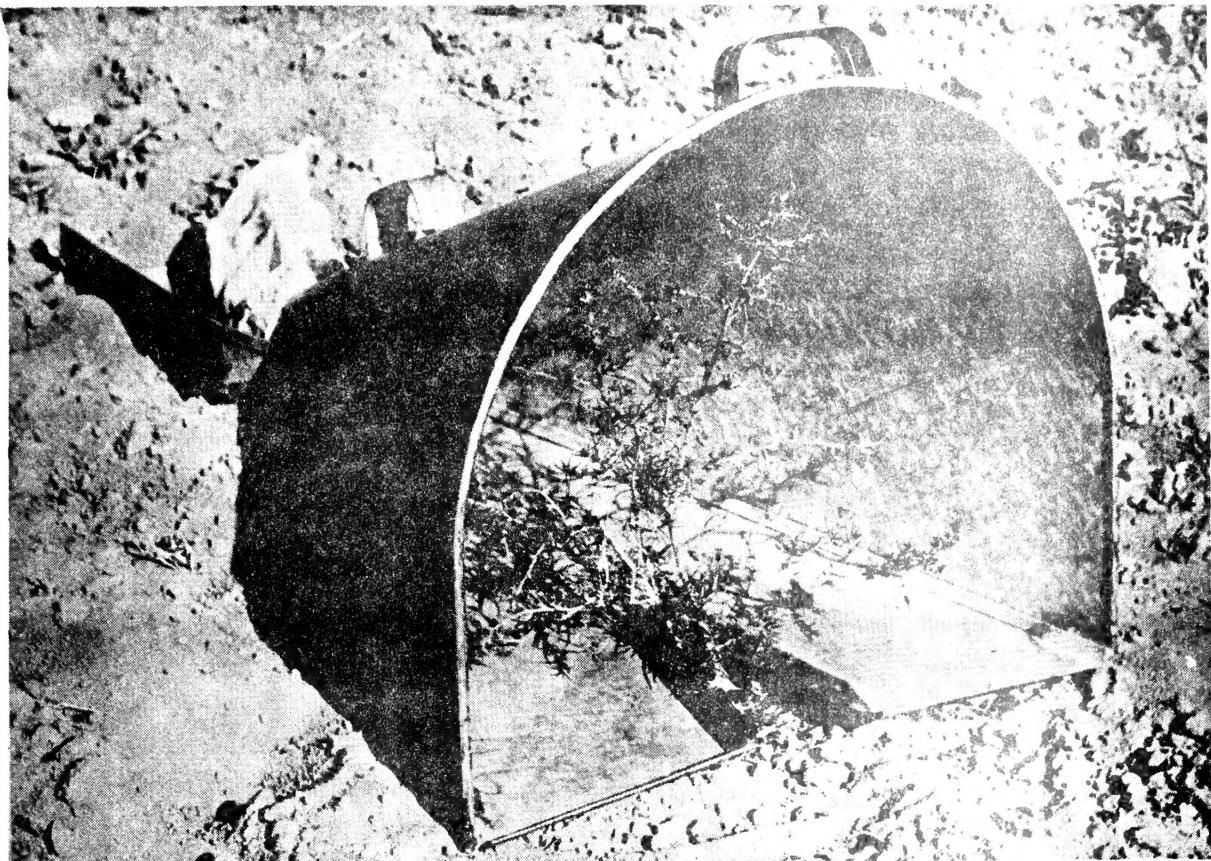


Figure 2.--Front view of the scoop, showing the thistle plant in position just before it is cut off.

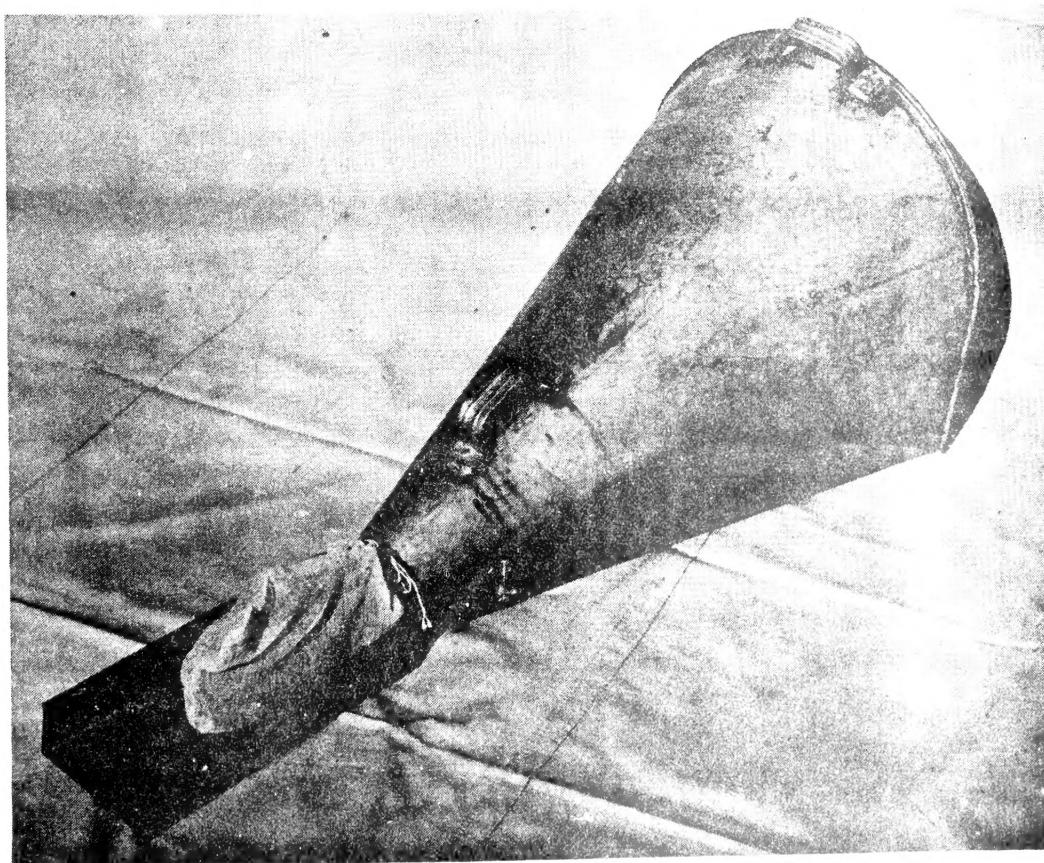


Figure 3.--Rear view of the scoop, showing the sack in position.

